ACOUSTICAL SITE ASSESSMENT
FUERTE RANCH ESTATES – SAN DIEGO CA
GPA 03-006, R03-017, TM 5343RPL, CP 16577

Submitted to:

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ISE Project #04-075

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INTRODUCTION AND DEFINITIONS

Existing Site Characterization

The project site consists of approximately 26.9 acres located within the unincorporated community of Valle de Oro in the eastern portion of the County of San Diego, California as shown in Figure 1 below. The project site is located south of Fuerte Drive and east of Damon Lane. Avocado Boulevard to the west provides regional access to the project area from Interstate 8 (I-8) to the north.

FIGURE 1: Project Vicinity Map – Fuerte Ranch Estates Development Site (ISE 11/06)

The development area currently resides as a poultry farm (Hooper's Poultry Farm) along with several single-family residences. The remainder of the project site is mostly disturbed with a drainage ditch running through the middle of the site from north to south. Elevations across the entire property range from approximately 535 to 605 feet above mean sea level (MSL) as can be seen in Figure 2 below. An aerial photograph of the existing site conditions can be seen in Figure 3 on the following page.

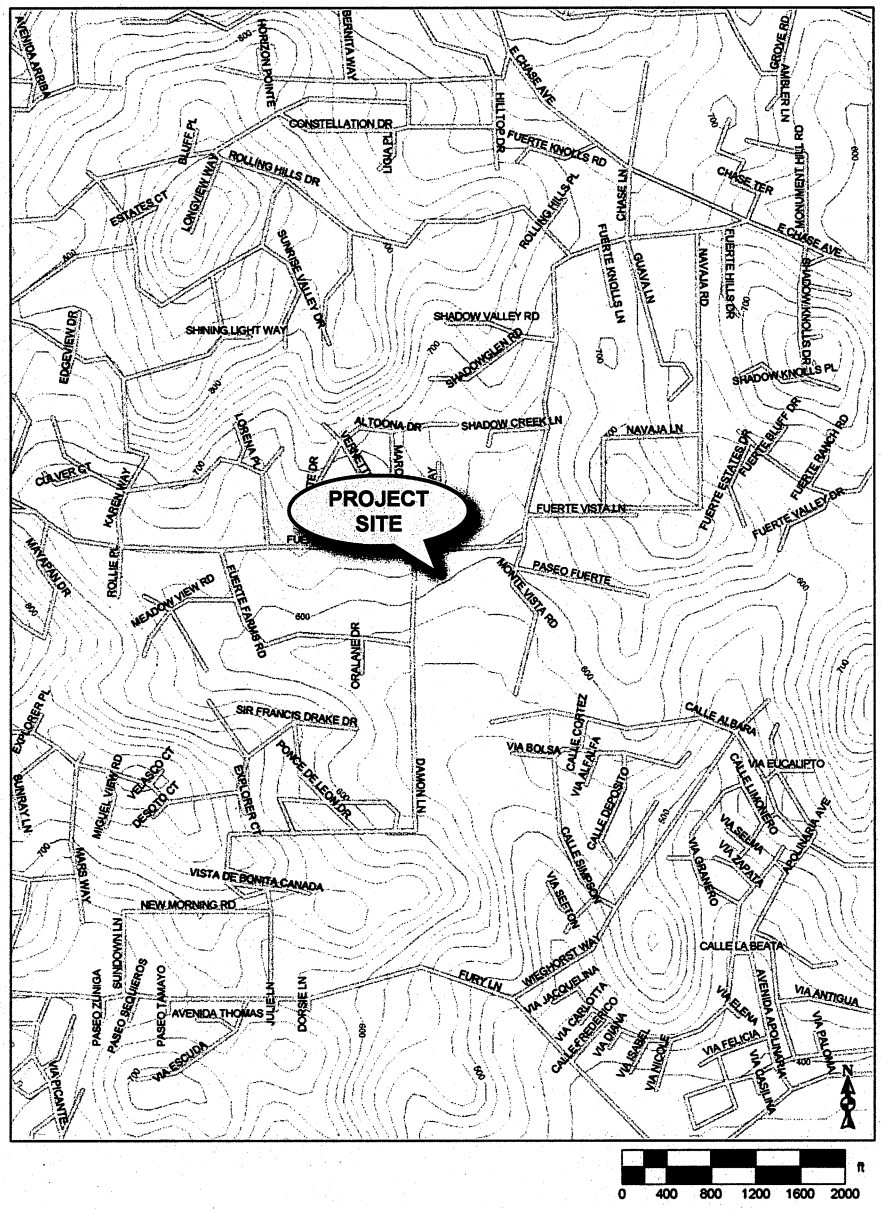

FIGURE 2: Project Site Map with Topography (ISE 11/06)

FIGURE 3: Project Site Aerial Photograph (© AirPhoto USA 1/03)

Project Description

The development plan calls for the removal of the poultry facility and all existing structures including the residential dwellings. The plan proposes the construction of 40 new single-family half-acre residential lots within the aforementioned 26.9-acre project site. The proposed development plan requires a General Plan Amendment (GPA) and zoning change form intensive agricultural (A-72) use to a rural residential designation of RR-2 having a minimum lot size of half acre. The proposed site development plan is shown in Figure 4 on the following page.

Acoustical Definitions

Sound waves are linear mechanical waves. They can be propagated in solids, liquids, and gases. The material transmitting such a wave oscillates in the direction of propagation of the wave itself. Sound waves originate from some sort of vibrating surface. Whether this surface is the vibrating string of a violin or a person's vocal cords, a vibrating column of air from an organ or clarinet, or a vibrating panel from a loudspeaker, drum, or aircraft, the sound waves generated are all similar. All of these vibrating elements alternately compress the surrounding air during forward motion and expand it on the backward movement.

There is a large range of frequencies within which linear waves can be generated, sound waves being confined to the frequency range that can stimulate the auditory organs to the sensation of hearing. For humans this range is from about 20 Hertz (Hz or cycles per second) to about 20,000 Hz. The air transmits these frequency disturbances outward from the source of the wave. Sound waves, if unimpeded, will spread out in all directions from a source. Upon entering the auditory organs, these

waves produce the sensation of sound. Waveforms that are approximately periodic or consist of a small number of periodic components can give rise to a pleasant sensation (assuming the intensity is not too high), for example, as in a musical composition. Noise, on the other hand, can be represented as a superposition of periodic waves with a large number of components.

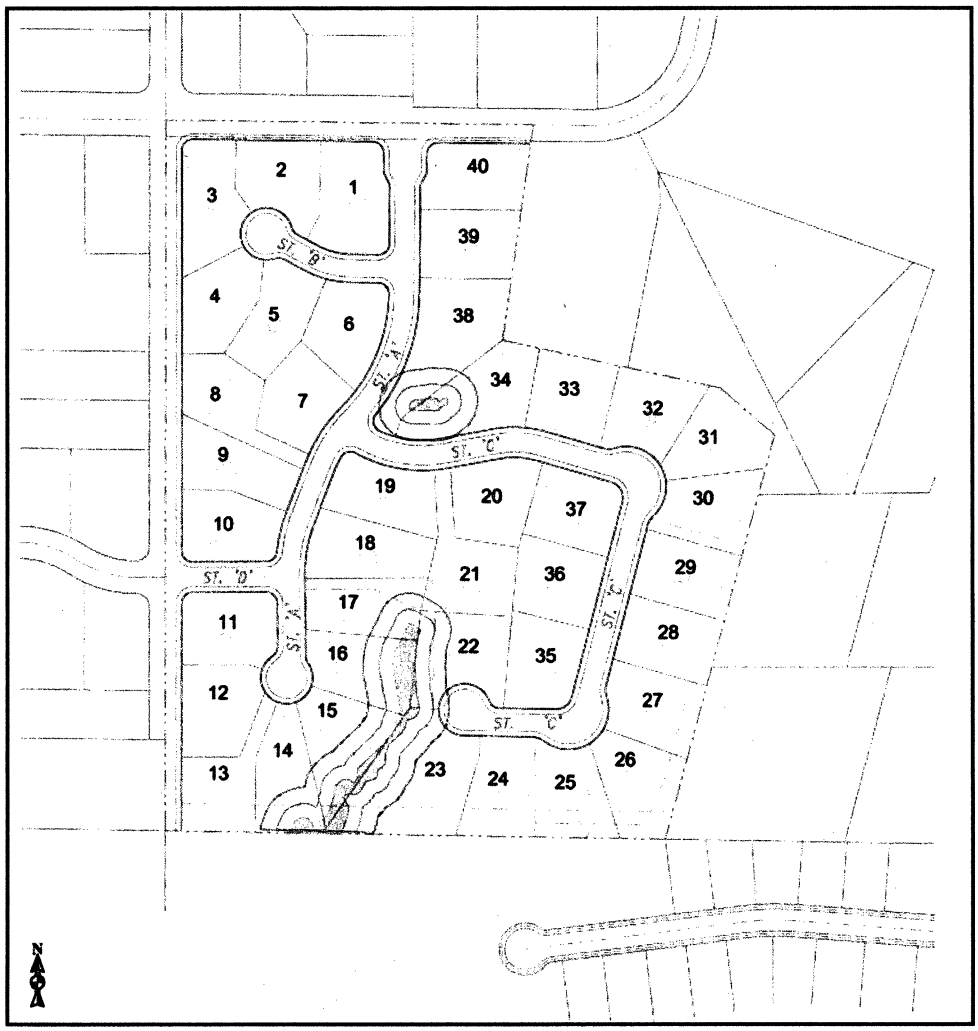

FIGURE 4: Proposed TM5343RPL Site Plan (Polaris Development Consultants 11/06)

Noise is generally defined as unwanted or annoying sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, and the sensitivity of the individual hearing the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric levels. The loudest sounds that the human ear can hear comfortably are approximately one trillion (or $1x10^{12}$) times the acoustic energy that the ear can barely detect. Because of this vast range, any attempt to represent the acoustic intensity of a particular sound on a linear scale becomes unwieldy. As a result, a logarithmic ratio originally conceived for radio work known as the decibel (dB) is commonly employed.

A sound level of zero "0" dB is scaled such that it is defined as the threshold of human hearing and would be barely audible to a human of normal hearing under extremely quiet listening conditions. Such conditions can only be generated in anechoic or "dead rooms". Typically, the quietest environmental conditions (extreme rural areas with extensive shielding) yield sound levels of approximately 20 dB. Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB roughly correspond to the threshold of pain and would be associated with sources such as jet engine noise or pneumatic equipment.

The minimum change in sound level that the human ear can detect is approximately 3 dB. A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sounds loudness. A change in sound level of 10 dB actually represents an approximate 90 percent change in the sound intensity, but only about a 50 percent change in the perceived loudness. This is due to the nonlinear response of the human ear to sound.

As mentioned above, most of the sounds we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The intensities of each frequency add to generate the sound we hear. The method commonly used to quantify environmental sounds consists of determining all of the frequencies of a sound according to a weighting system that reflects the nonlinear response characteristics of the human ear. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (or dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the Leq (or equivalent sound level) is used. Leq is the energy-mean A-weighted sound level during a measured time interval. It is the 'equivalent' constant sound level that would have to be produced by a given source to equal the average of the fluctuating level measured. For most acoustical studies, the study interval is generally taken as one-hour and is abbreviated *Leq-h*; however, other time intervals are utilized depending on the jurisdictional preference.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. They are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of a stated time. Sound levels associated with the L10 typically describe transient or short-term events, while levels associated with the L90 describe the steady state (or most prevalent) noise conditions. In addition, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum and minimum measured sound level (Lmax and Lmin) indicators. The Lmin value obtained for a particular monitoring location is often called the *acoustic floor* for that location.

Another sound measure employed by the State of California and the County of San Diego is known as the Community Noise Equivalence Level (CNEL) is defined as the "A" weighted average sound level for a 24-hour day. It is calculated by adding a 5-decibel penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.), and a 10-decibel penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours.

APPLICABLE SIGNIFICANCE CRITERIA

Construction Noise Impact Thresholds

The County of San Diego Noise Ordinance Section 36.410 governs construction noise emissions. The relevant parts are cited below.

(a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.

(b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

(c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

Vehicular/Transportation Noise Impact Thresholds

Transportation noise levels, such as those produced by vehicles traveling to and from the project site, are governed under Policy 4b of the *County of San Diego's Noise Element of the County's General Plan (as revised 7/06)*. The relevant sections of the Noise Element are cited below:

Because exterior community noise equivalent levels (CNEL) above 60 decibels and/or interior CNEL above 45 decibels may have an adverse effect on public health and welfare, it is the policy of the County of San Diego that:

1. Whenever it appears that new *development* may result in any (existing or future) *noise sensitive land use* being subject to noise levels of CNEL equal to 60 *decibels (A)* or greater, an acoustical analysis shall be required.
2. If the acoustical analysis shows that noise levels at any *noise sensitive land use* will exceed CNEL equal to 60 decibels, modifications shall be made to the *development* which reduce the *exterior noise* level to less than CNEL of 60 *decibels (A)* and the *interior noise* level to less than CNEL of 45 *decibels (A)*[1].
3. If modifications are not made to the *development* in accordance with paragraph 2 above, the *development* shall not be approved unless a finding is made that there are specifically identified overriding social or economic considerations which warrant approval of the development without such modification; provided, however, if the acoustical study shows that sound levels for any noise sensitive land use will exceed a CNEL equal to 75 *decibels (A) even* with such modifications, the *development* shall not be approved irrespective of such social or economic considerations.

Definitions, Notes and Exceptions

"Decibels (A)" refers to A-weighted sound levels as noted on page VIII-2 within the Element.

"Development" means any physical development including but not limited to residences, commercial, or industrial facilities, roads, civic buildings, hospitals, schools, airports, or similar facilities.

"*Exterior noise*":

(a) For single family detached dwelling projects, "exterior noise" means noise measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(i) Net lot area up to 4,000 sq. ft.:	400 square feet.
(ii) Net lot area 4,000 sq. ft. to 10 ac.:	10% of net lot area.
(iii) Net lot area over 10 ac.:	1 ac.

(b) For all other projects, "exterior noise" means noise measured at all exterior areas, which are provided for group or private usable, *open space* purposes.

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[1] **Action Program 4b1:** Recommend programs to soundproof buildings or redevelop areas where it is impossible to reduce existing source noise to acceptable levels.

Action Program 4b2: Study the feasibility of extending the application of Section 1092, California Administrative Code dealing with noise insulation standards to single-family dwellings, and incorporating higher standards for reduction of exterior noise intrusion into structures.

Action Program 4b3: Require present and projected noise level data to be included in Environmental Impact Reports. Designs to mitigate adverse noise impacts shall also be used.

(c) For County road construction projects, the exterior noise level due to vehicular traffic impacting a noise sensitive area should not exceed the following values:

(i) Federally funded projects: The Noise standard contained in applicable Federal Highway Administration Standards.

(ii) Other projects: 60 *decibels (A),* except if the existing or projected noise level without the project is 58 decibels (*A*) or greater, a 3 *decibel* (*A*) increase is allowed, up to the maximum permitted by Federal Highway Administration Standards.

"Group or Private Usable Open Space" shall mean: Usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways (Group Usable Open Space); and usable open space intended for use of occupants of one dwelling unit, normally including yards, decks and balconies (Private Usable Open Space).

"Interior noise": The following exception shall apply: For rooms which are usually occupied only a part of the day (schools, libraries, or similar), the interior one-hour average sound level, due to noise outside, should not exceed 50 *decibels (A).*

"Noise sensitive land use" means any residence, hospital, school, hotel, resort, library or any other facility where quiet is an important attribute of the environment.

State of California CCR Title 24 Noise Insulation Standards

The California Code of Regulations (CCR), Title 24, Noise Insulation Standards, states that multi-family dwellings, hotels, and motels located where the CNEL exceeds 60 dBA, must obtain an acoustical analysis showing that the proposed design will limit interior noise to less than 45 dBA CNEL. Interior noise standards are typically applied to sensitive areas within the structure where low noise levels are desirable (such as living rooms, dining rooms, bedrooms, and dens or studies).

Worst-case noise levels, either existing or future, must be used for this determination. Future noise levels must be predicted at least ten years from the time of building permit application. The County of San Diego has adopted the CCR Title 24 standards as part of their Policy 4b implementation.

Wildlife Habitat Noise Regulations

Construction noise generated by this project is regulated by the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) for its effect on federally endangered least Bell's vireo (*Vireo bellii pusillus*). Resource agencies have theorized that elevated noise levels can potentially mask songs of various bird species, which are used to attract mates and defend territories.

The San Diego Association of Governments (SANDAG) in a 1990 study entitled "*Comprehensive Species Management Plan for the least Bell's vireo,*" estimated (theoretically) that {traffic} noise levels above 60 dBA Leq in vireo breeding areas may

sufficiently mask the vireo's song and potentially impact this species during their breeding season which occurs from March 1 to September 1. The SANDAG report conclusions were unclear as to the specific time interval of the measurement, but it is typically taken as being one hour.

Research is on going, but in the absence of species-specific data, these same study results are applied by the Service to other bird species such the California Gnatcatcher (*Polioptila californica californica*), California least Tern (*Sterna antillarum browni*), Yuma Clapper Rail (*Rallus longirostris yumanensis*), etc.

ANALYSIS METHODOLOGY

Site Monitoring Procedure

One Quest Model 2900 ANSI Type 2 integrating sound level meter was used as the data collection device. The meter location (denoted as ML 1) was mounted to a tripod approximately five feet above the ground and was placed within the project boundary. ML 1 was placed at the worst-case noise exposure location within project site (i.e., intersection of Fuerte Drive and Damon Lane.). This was done in order to capture the existing noise levels within the proposed project site during normal afternoon traffic flow conditions. The monitoring location is shown graphically in Figure 5 on the following page and in Figure 6 for comparison with the proposed site design.

The measurements were performed on May 17, 2004 starting at 2:30 p.m. and were rechecked for consistency on November 8, 2006 at the same time. All equipment was calibrated before testing at ISE's acoustics and vibration laboratory to verify conformance with ANSI S1-4 1983 Type 2 and IEC 651 Type 2 standards.

Construction Noise Impact Assessment Approach

Construction noise emission generators associated with the proposed residential development would consist of a worst-case bulldozer, compactor, water tank truck, scrapers and grader. The project is of typical construction in that all pads would be constructed at the same time. The analysis presented herein would be considered a single {construction} event type scenario.

Construction noise impacts were based upon published levels of typical major classes of construction equipment (*Source: EPA PB 206717, Environmental Protection Agency, 12/31/71, "Noise from Construction Equipment and Operations"*). The analysis presented identifies the expected equipment type, the duty cycle of each of the equipment components, and the expected 8-hour energy average noise level (over a given workday) as well as the expected worst-case noise level at the nearest sensitive receptor (per County Ordinance). It is assumed that the equipment would be operated using a full duty cycle, thereby making this a worst-case assessment as defined under the California Environmental Quality Act (or CEQA).

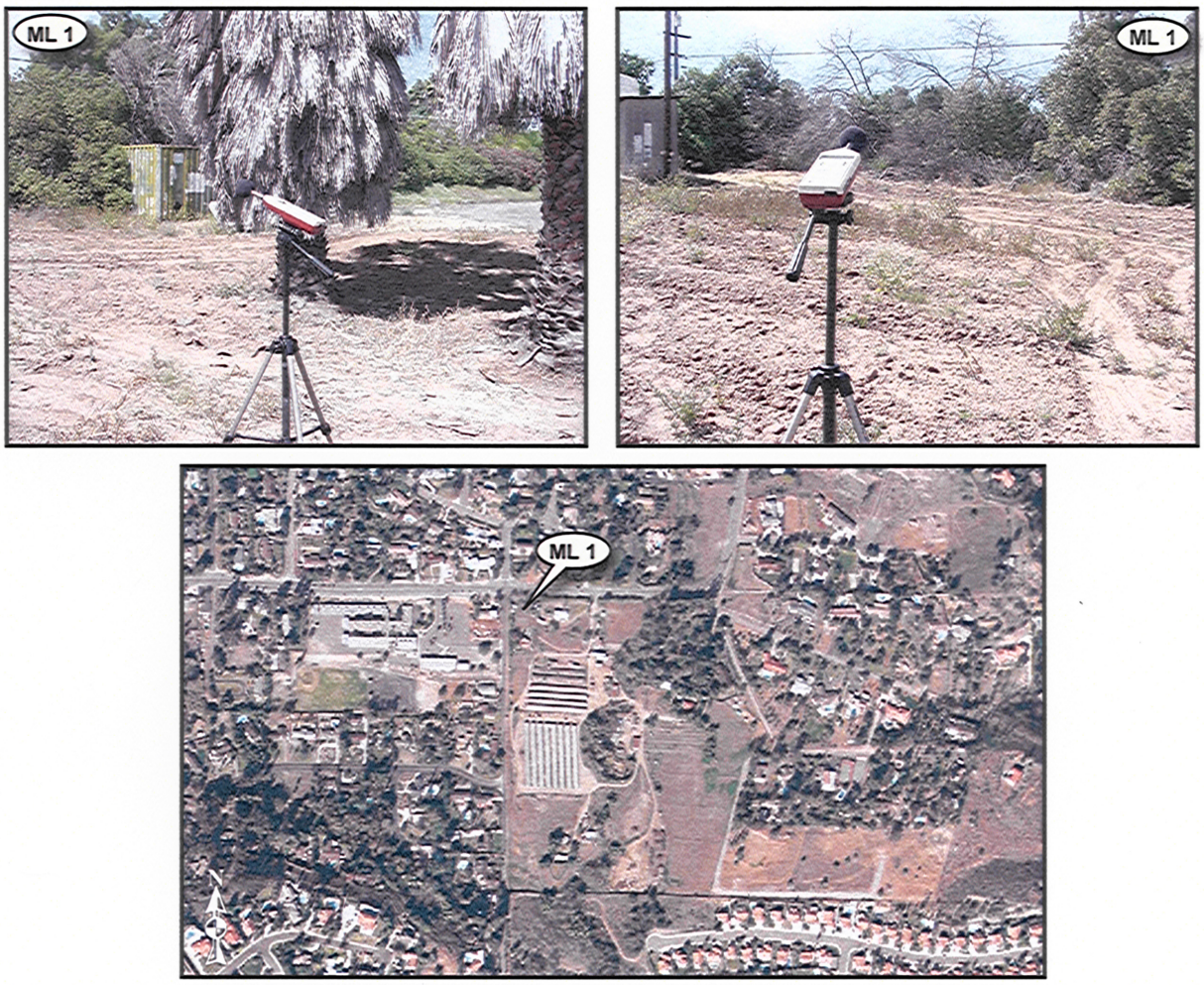

FIGURE 5: Ambient Noise Monitoring Locations (ISE 5/04, 11/06)

Haul Truck Traffic Segment Impact Assessment Approach

The ISE *RoadNoise v2.0* traffic noise prediction model which is based upon Caltrans Sound 32 Traffic Noise Prediction Model with California (CALVENO) noise emission factors (based on FHWA RD-77-108 and FHWA/CA/TL-87/03 standards) was used to calculate the increase in vehicular traffic noise levels along major servicing roadways due to the TM 5343RPL1 grading operations. The model assumed a 'hard-site' propagation rule (i.e., 3.0 dBA loss per doubling of distance (DD) between source and receiver) in accordance with observed surrounding area topography along the proposed haul route, thereby yielding a representative worst-case noise contour set.

The traffic noise model input included a tabulation of Fuerte Drive as identified as the truck hauling alignment (*Source: Darnell & Associates, 4/13/06*). Average daily traffic volumes were used assuming a 10% flow pattern with a 95/3/2 percent vehicle mix representing existing trip distribution, a 10% flow pattern with a 92.9/3.0/4.1 percent mix

representing existing trip distribution with the additional haul trucks. Modeled traffic speeds represent observed levels.

Traffic Noise Impact Assessment Approach

The Caltrans Sound 32 Traffic Noise Prediction Model with California (CALVENO) noise emission factors (*based on FHWA RD-77-108 and FHWA/CA/TL-87/03 standards*) were used to calculate future onsite vehicular traffic noise levels. The Sound 32 model was calibrated in accordance with Appendix E of the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) for a normalized Level of Service of 'C'. This is also in accordance with Caltrans Technical Noise Supplement (TeNS) sections N-5440 & N-5460 published October 1998. ISE also reviewed the State's Technical Advisory Note (TAN-02-01) and incorporated its recommendations where applicable.

Model input included a digitized representation of Fuerte Drive, available local site topography, future Average Daily Traffic (ADT) volumes, vehicle mix, and receptor elevations. The roadway and site topography elevations were obtained from the data and plans provided by Polaris Development Consultants dated 11/06.

Receptor elevations were considered five feet above the appropriate floor (pad) elevation and were taken near the center of the proposed rear yard areas of each lot. The model assumed a "hard" site sound propagation rule (i.e., a 3-dBA loss per doubling of distance from roadway to receiver). Second floor receptor areas were modeled at 15 feet above the respective pad elevation.

Using this data, CNEL noise exposure contours were effectively determined for the both the 60-dBA ground- and second-floor conditions. The modeled receptor locations used in the analysis are shown in Figure 6 on the following page.

Model output consisted of peak hour energy-mean A-weighted sound levels (or Leq-h) for each receptor examined. For peak hour traffic percentages between approximately 8 and 12 percent, the energy-mean A-weighted sound level is equivalent to the Community Noise Equivalent Level (CNEL). Outside this range, a maximum variance of up to two (2) dBA occurs between Leq-h and CNEL.

Traffic Segment Impact Assessment Approach

The ISE *RoadNoise v1.0* traffic noise prediction model which is based upon Caltrans Sound 32 Traffic Noise Prediction Model with California (CALVENO) noise emission factors (based on FHWA RD-77-108 and FHWA/CA/TL-87/03 standards) was used to calculate the increase in vehicular traffic noise levels along major servicing roadways due to the proposed development project. The model assumed a 'hard-site' propagation rule (i.e., 3.0 dBA loss per doubling of distance (DD) between source and receiver), thereby yielding a representative worst-case noise contour set.

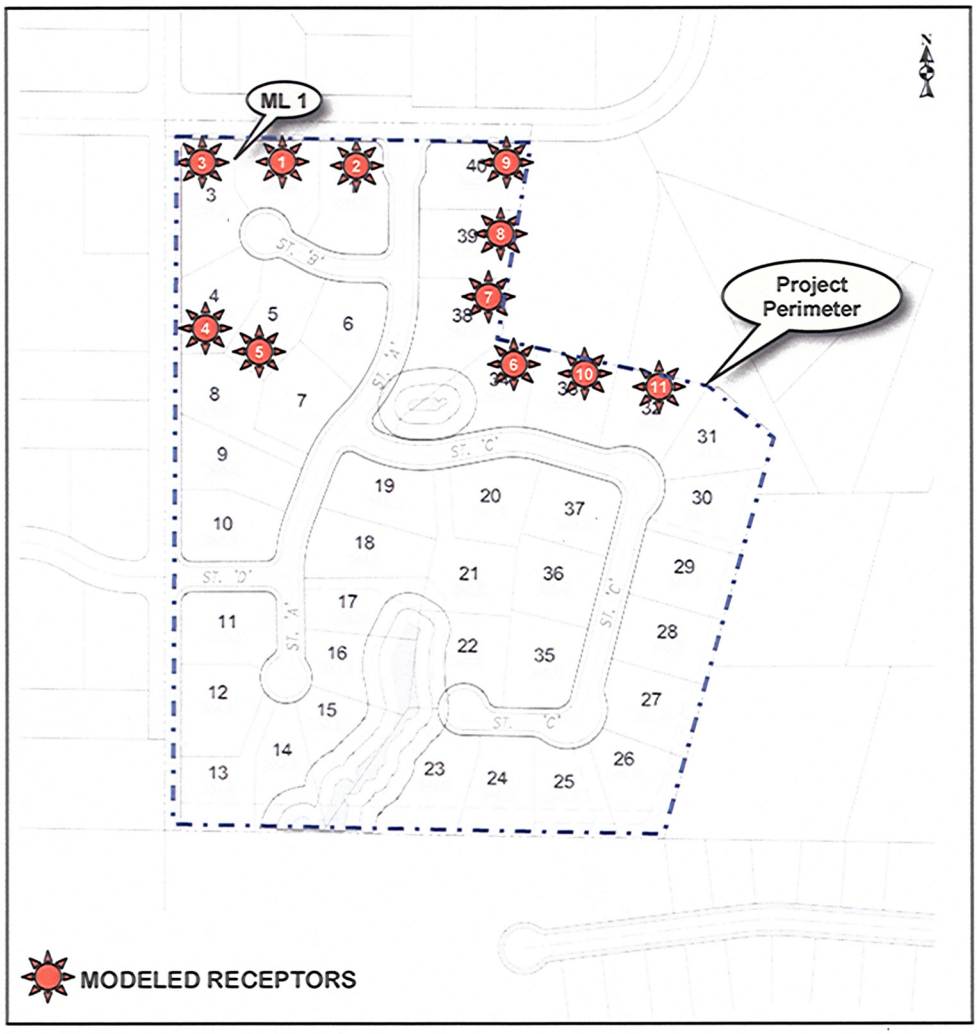

FIGURE 6: Ambient and Modeled Receptor Locations (ISE 11/06)

FINDINGS / RECOMMENDATIONS

Existing Ambient Noise Conditions

Testing conditions during the monitoring period were sunny with an average barometric pressure reading of 30.02 in-Hg, an average southwesterly wind speed of 4 to 7 miles per hour (MPH), and an approximate mean temperature of 70 degrees Fahrenheit. The results of the sound level monitoring are shown in Table 1 on the following page and reflect the values for the equivalent sound level (Leq), the maximum and minimum measured sound levels (Lmax and Lmin), and the statistical indicators L10, L50, and L90, are given for each monitoring location. The observed existing dominant noise source was from local traffic along Fuerte Drive.

TABLE 1: Measured Ambient Sound Levels – TM 5343RPL Development Site

		1-Hour Noise Level Descriptors in dBA					
Site	**Start Time**	**Leq**	**Lmax**	**Lmin**	**L10**	**L50**	**L90**
ML 1	2:30 p.m.	52.8	69.4	40.5	56.2	50.4	45.2

Monitoring Location:

ML 1: Northeastern portion of project site near Fuerte Drive - GPS N32° 45.716 x W116° 56.685
Meter located approximately 100 feet from roadway edge.

Rechecked levels had a maximum variance of ±0.3 dBA

Measurements performed by ISE on 5/17/04 and 11/8/06. Estimated Position Error (EPE) = 16 feet.

Noise levels on site were found to be consistent with the observed rural community setting. The value for the equivalent sound level (Leq-h) for the project site was found to be 52.8 ±0.3 dBA (when accounting for drift due to the two year observable time span between measurements) and still found to be solely a function of the separation distance from the aforementioned roadway. Background noise levels (i.e., L90 levels) were found to be slightly lower than their energy equivalent counterparts (e.g., Leq-h) indicating traffic noise as the primary dominant source. The acoustic floor for the site, as indicated by Lmin metric, was found to be 40.5 ±0.3 dBA.

Construction Noise Emission Levels

Construction within the proposed project area would typically occur between the hours of 7 a.m. and 4 p.m. Monday through Friday in accordance with County operational requirements. Main construction equipment activities would consist primarily of a bulldozer, compactor, water tank truck, and grader required for lot leveling in accordance with construction demands.

The results are shown in Table 2 on the following page. The nearest {existing} residence is located a minimum of approximately 100 feet from the edge of any proposed construction activities associated with the project site (i.e., the proposed development on to the existing residential structures to the north).

The average point-source propagation loss between these receptors and the closest possible construction equipment would be 6.0 decibels or greater which would yield worst-case aggregate construction noise levels at the closest residential receptors of approximately 74 dBA or less. This level is below the County's construction noise abatement standards. Therefore, no significant noise impacts due to construction activities are expected.

Should construction occur within 100 feet of any residential area, a temporary eight-foot-high ½-inch plywood noise wall without any gaps or openings be installed around the perimeter of the project site (see figure 6 above) per the request of the County of San Diego. The applicant has agreed to comply with this request. A wall of

this height would be expected to produce an additional barrier attenuation, which would further decrease the predicted construction sound levels.

TABLE 2: Predicted Construction Levels – TM 5343RPL Development Site

Equipment Type	Qty. Used	Duty Cycle (Hrs. / day)	Source Level @ 50 Feet (dBA)	Cumulative Effect @ 50 Feet (dBA Leq-8h)
Bulldozer	1	8	75	75.0
Compactor	1	8	75	75.0
Water Tank Truck	1	8	70	70.0
Grader	1	8	75	75.0
			Aggregate Noise Level Measured @ 50-Feet:	80.2
			Noise Loss to nearest receptor @ 100-Feet:	- 6.0
			Sum @ Nearest Receptor (> 100 ft Distant):	74.2

Additionally, per the findings of the project biological technical report, no grading or clearing within 500 feet of occupied raptor habitat during the raptor-breeding season (December and June) shall occur. As such, all grading permits, improvement plans, and the final map shall state the same. If clearing or grading would occur during the breeding season for raptors, a pre-construction survey shall be conducted to determine if these species occur within the areas impacted by noise. To avoid take under the Migratory Bird Treaty Act (MBTA), impacts shall be avoided within 500 feet of nesting raptors. If there are no raptors nesting (includes nest building or other breeding/nesting behavior) within this area, development shall be allowed to proceed. However, if raptors are observed nesting or displaying breeding/nesting behavior within the area, construction shall be postponed until all nesting (or breeding/nesting behavior) has ceased or until after July 15.

In order to ensure compliance with the MBTA, clearing of native vegetation shall occur outside of the breeding season of most avian species (February 1 through September 15). Brushing, clearing, and/or grading during the breeding season of MBTA-covered species may only occur after a pre-construction survey determines that no nesting birds (or birds displaying breeding or nesting behavior) are present in the area to be brushed, cleared, and/or graded and approval is obtained from the Director of Planning and Land Use with concurrence from USFWS and CDFG. *(Source: Fuerte Ranch Estates Biological Technical Report, HELIX Environmental Planning, Inc. 4/17/06).*

Predicted Truck Haulage Noise Levels

The TM 5343RPL1 grading operations are expected to have a total worst-case haul truck generation level of 80 heavy trucks ADT. The results showing the effect of traffic noise increases on the various servicing roadway segments associated with the proposed TM 5343RPL1 haul route are presented in Tables 3a and –b on the following page for the following scenarios:

3a) Existing Average Daily Traffic Volumes without Truck Haulage
3b) Average Daily Traffic Volumes with Proposed Truck Haulage

For each roadway segment examined, the worst case average daily traffic volume (ADT) and observed/predicted speeds are shown along with the corresponding reference noise level at 50-feet (in dBA). Additionally, the line-of-sight distance to the 60 and 65 dBA CNEL contours are provided as an indication of the worst-case theoretical traffic noise contour placement.

TABLE 3a: Existing Average Daily Traffic Volumes without Truck Haulage

Roadway Segment	Percent Mix	ADT	Speed (MPH)	CNEL Contour Distances (feet) SPL at 50 Feet	65 dBA Contour	60 dBA Contour
Fuerte Drive						
West of project	95.0/3.0/2.0	3,507	40	63.7	37	118
Avocado Boulevard						
South of Fuerte Drive	95.0/3.0/2.0	26,080	45	73.6	358	1,133

Notes:
- o ADT = Average Daily Traffic - Source: Darnell & Associates, Inc., 4/13/06.
- o SPL = Sound Pressure Level in dBA at 50-feet from the road edge.
- o CNEL = Community Noise Exposure Level. All values given in dBA CNEL.

TABLE 3b: Average Daily Traffic Volumes with Proposed Truck Haulage

Roadway Segment	Percent Mix	ADT	Speed (MPH)	CNEL Contour Distances (feet) SPL at 50 Feet	65 dBA Contour	60 dBA Contour
Fuerte Drive						
West of project	92.9/3.0/4.1	3,587	40	64.9	49	156
Avocado Boulevard						
South of Fuerte Drive	92.9/3.0/4.1	26,080	45	74.5	448	1,418

Notes:
- o ADT = Average Daily Traffic - Source: Darnell & Associates, Inc., 4/13/06.
- o SPL = Sound Pressure Level in dBA at 50-feet from the road edge.
- o CNEL = Community Noise Exposure Level. All values given in dBA CNEL.

As can be seen from the traffic data, the largest project-related haul truck noise increase would occur along Fuerte Drive. The worst-case increase would be 1.2 dBA CNEL, which is below the commonly accepted 3.0-dBA CEQA significance threshold. Therefore, there are no impacts related to soil import for the TM 5343RPL1 grading operation.

Future Traffic Noise Impacts

The primary source of future noise near the project site would be from vehicular traffic along Fuerte Drive, which is a Light Collector Roadway. This roadway is expected to have worst-case future traffic volumes of 5,000 ADT (*Source: Traffic Study for Fuerte Ranch Estates (TM 5343), Revised 4/13/06*). The roadway was modeled at the worst-case scenario of having projected speed of 40 MPH based upon the findings of the project traffic engineer. Peak hour traffic values are calculated for a 10% traffic flow pattern and a 95/3/2 (automobiles/medium/heavy vehicles) percent mix for the aforementioned roadway based upon typical County procedures.

The results of the acoustical modeling are shown below in Table 4. The acoustical model files are provided as an attachment to this report. Future exterior traffic noise levels would not exceed the County's noise threshold standard of 60-dBA CNEL for any outdoor usable space with all ground level contours remaining outside the project boundaries (i.e., approximately 30 feet from the roadway centerline). No exterior noise mitigation would be required. All backyard areas (i.e., 100% of the outdoor usable rear yard area) would be fully maintained lower than 60 dBA CNEL in accordance with new Policy 4b requirements. The location of the 60 dBA CNEL ground contour extremum is provided in Figure 7 on the following page.

TABLE 4: Acoustical Modeling Results – TM 5343RPL Development

Receptor #	Lot #	Ground Level (Unmitigated)	Upper Level (Unmitigated)
1	2	55.0	59.5
2	1	55.9	56.4
3	3	53.4	56.3
4	4	53.1	54.4
5	5	52.0	52.3
6	34	51.5	51.6
7	38	53.3	53.8
8	39	56.4	56.9
9	40	59.4	**63.0**
10	33	50.1	49.9
11	32	48.0	48.3

Additionally, only the second-floor area within Lot 40 would exceed the CCR Title 24 and County of San Diego's noise abatement threshold of 60 dBA CNEL (i.e., the second floor 60 dBA CNEL contour would extend approximately half way or ±100 feet from the roadway centerline into Lot 40 as also shown in Figure 7 on the following page). Thus, in accordance with the County's noise regulations, only Lot 40 would require interior noise mitigation (i.e., specialized door and window treatments).

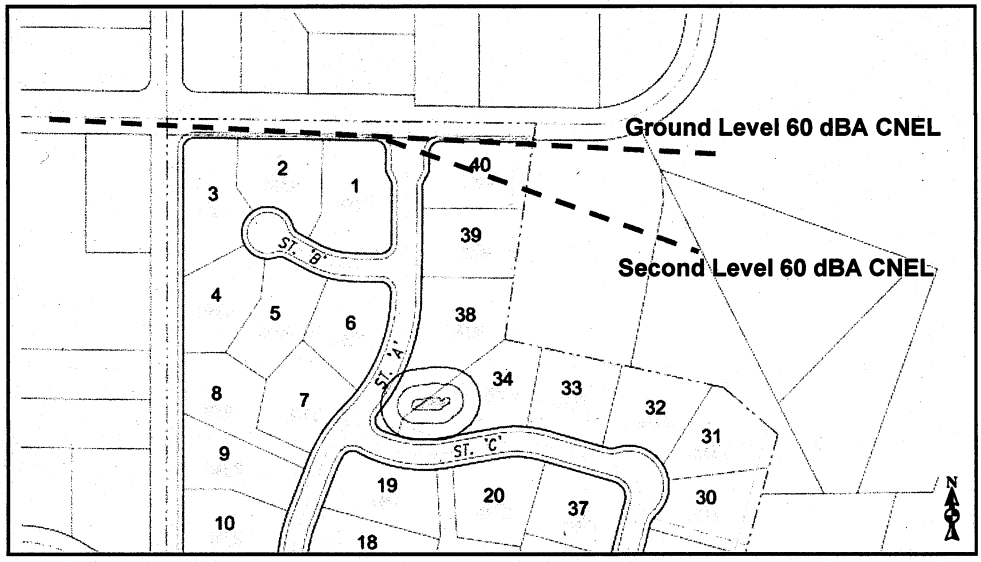

FIGURE 7: Predicted 60 dBA CNEL Noise Contour Extremum (ISE 5/07)

Prior to issuance of building permits for the proposed project, an interior noise analysis compliant with the California Code of Regulations (CCR), Title 24, Noise Insulation Standards would be required for the aforementioned lot. The acoustical analysis should demonstrate that the proposed architectural design would limit interior noise to 45 dBA CNEL or less. Worst-case noise levels, either existing or future, must be used for this determination.

Predicted Near-Term Traffic Noise Increases

The results showing the effect of near-term traffic noise increases on the various servicing roadway segments associated with the proposed project is presented in Tables 5a and -b on the following pages. For each roadway segment examined the worst case average daily traffic volume (ADT) and observed/predicted speeds are shown along with the corresponding reference noise level at 50-feet (in dBA). Additionally, the line-of-sight distance to the 60 and 65 dBA CNEL contours from the roadway centerline are provided as an indication of the worst-case unobstructed theoretical traffic noise contour placement.

TABLE 5a: Existing Traffic Noise Conditions

Roadway Segment	ADT	Speed (MPH)	SPL	CNEL Contour Distances (feet) 65 dBA Contour	60 dBA Contour
Avocado Boulevard					
North of Fuerte Drive	14,275	55	72.8	302	955
South of Fuerte Drive	22,860	55	74.9	484	1,529
Fuerte Drive					
West of Avocado Boulevard	7,433	35	65.6	57	181
Avocado Boulevard to Fuerte Farms Road	3,182	35	61.9	25	78
Fuerte Farms Road to Damon Lane	3,182	35	61.9	25	78
Damon Lane to Project Access	3,290	35	62.1	25	80
Project Access to Chase Lane	3,290	35	62.1	25	80
Chase Lane to Chase Avenue	3,279	35	62.0	25	80
Fuerte Farms Road					
Fuerte Drive to Damon Lane	265	35	51.1	2	6
Damon Lane					
South of Fuerte Drive	267	35	51.2	2	7
Chase Avenue					
West of Chase Lane	15,491	50	72.2	262	827
East of Fuerte Drive	14,804	50	72.0	250	791
State Route 94					
West of Avocado Boulevard	57,000	65	80.6	1,815	5,738
East of Avocado Boulevard	48,500	65	79.9	1,544	4,883

Notes:

- ADT = Average Daily Trips - Source: Darnell & Associates, 4/06.
- SPL = Sound Pressure Level in dBA at 50-feet from the road edge. CNEL = Community Noise Exposure Level.
- All values given in dBA CNEL. Contours assumed to be line-of-sight perpendicular (⊥) distance. Mix Ratio set at 96/2/2.

TABLE 5b: Existing + Project Traffic Noise Conditions

Roadway Segment	ADT	Speed (MPH)	SPL	CNEL Contour Distances (feet) 65 dBA Contour	60 dBA Contour
Avocado Boulevard					
North of Fuerte Drive	14,309	55	72.8	303	957
South of Fuerte Drive	22,975	55	74.9	486	1,537
Fuerte Drive					
West of Avocado Boulevard	7,572	35	65.7	58	185
Avocado Boulevard to Fuerte Farms Road	3,470	35	62.3	27	85
Fuerte Farms Road to Damon Lane	3,446	35	62.3	27	84
Damon Lane to Project Access	3,554	35	62.4	27	87
Project Access to Chase Lane	3,482	35	62.3	27	85
Chase Lane to Chase Avenue	3,461	35	62.3	27	85
Fuerte Farms Road					
Fuerte Drive to Damon Lane	289	35	51.5	2	7
Damon Lane					
South of Fuerte Drive	363	35	52.5	3	9
Chase Avenue					
West of Chase Lane	15,501	50	72.2	262	828
East of Fuerte Drive	14,986	50	72.0	253	800
State Route 94					
West of Avocado Boulevard	57,106	65	80.6	1,818	5,749
East of Avocado Boulevard	48,510	65	79.9	1,544	4,884

Notes:

- ADT = Average Daily Trips - Source: Darnell & Associates, 4/06.
- SPL = Sound Pressure Level in dBA at 50-feet from the road edge. CNEL = Community Noise Exposure Level.
- All values given in dBA CNEL. Contours assumed to be line-of-sight perpendicular (⊥) distance. Mix Ratio set at 96/2/2.

As can be seen from the traffic data, the largest project-related noise increase would be 1.3 dBA CNEL along Damon Lane south of Fuerte Drive. This level is far below the established 3.0-dBA-significance threshold; therefore, no impacts, either cumulative- or project-related are expected. All other roadway segments were found to produce near-term traffic noise level increases of less than 0.5 dBA CNEL.

CERTIFICATION OF ACCURACY AND QUALIFICATIONS

This report was prepared by Investigative Science and Engineering, Inc. (ISE) located at 16486 Bernardo Center Drive, Suite 278, San Diego, CA 92128. The members of its professional staff contributing to the report are listed below:

Rick Tavares *(rtavares@ise.us)*	B.S. Aerospace Engineering / Engineering Mechanics M.S. Mechanical Engineering M.S. Structural Engineering Ph.D. Civil Engineering
Ryan Taylor *(rtaylor@ise.us)*	B.S. Civil Engineering

ISE affirms to the best of its knowledge and belief that the statements and information contained herein are in all respects true and correct as of the date of this report. Should the reader have any questions regarding the findings and conclusions presented in this report, please do not hesitate to contact ISE at (858) 451-3505.

Content and information contained within this report is intended only for the subject project and is protected under 17 U.S.C. §§ 101 through 810. Original reports contain non-photo blue ISE watermark at the bottom of each page.

Approved as to Form and Content:

Rick Tavares, Ph.D.
Project Principal
Investigative Science and Engineering, Inc.

Attachments to this report: Sound 32 Model Input/Output Data
11x17 Proof Print of Proposed Site Plan

S32 INPUT/OUTPUT DECKS – GROUND FLOOR UNMITIGATED

```
TM 5343 - GROUND LEVEL UNMITIGATED
T-PEAK HOUR TRAFFIC CONDITIONS, 1
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L-FUERTE DR, 1
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N,590,1382,626,FD2
N,966,1375,608,FD3
N,1312,1371,594,FD4
N,1530,1369,600,FD5
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966.,1350,608,608,RE3
1312.,1346,594,594,RE4
1530.,1344,600,600,RE5
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R, 4 , 65 ,10
630,1173,600.,Lot 4
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854,1022,599.,Lot 5
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1130,1096,588.,Lot 38
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1170,1206,597.,Lot 39
R, 9 , 65 ,10
1184,1290,605.,Lot 40
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1280,924,570.,Lot 33
R, 11 , 65 ,10
1533,871,568.,Lot 32
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SOUND32 - RELEASE 07/30/91

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  3  Lot 3     65.     10.    53.4
  4  Lot 4     65.     10.    53.1
  5  Lot 5     65.     10.    52.0
  6  Lot 34    65.     10.    51.5
  7  Lot 38    65.     10.    53.3
  8  Lot 39    65.     10.    56.4
  9  Lot 40    65.     10.    59.4
 10  Lot 33    65.     10.    50.1
 11  Lot 32    65.     10.    48.0
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S32 INPUT/OUTPUT DECKS – SECOND FLOOR UNMITIGATED

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TM 5343 - SECOND LEVEL UNMITIGATED
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SOUND32 - RELEASE 07/30/91

TITLE: TM 5343 - SECOND LEVEL UNMITIGATED

REC REC ID    DNL  PEOPLE   LEQ(CAL)
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 2  Lot 1     65.     10.   56.4
 3  Lot 3     65.     10.   56.3
 4  Lot 4     65.     10.   54.4
 5  Lot 5     65.     10.   52.3
 6  Lot 34    65.     10.   51.6
 7  Lot 38    65.     10.   53.8
 8  Lot 39    65.     10.   56.9
 9  Lot 40    65.     10.   63.0
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11  Lot 32    65.     10.   48.3
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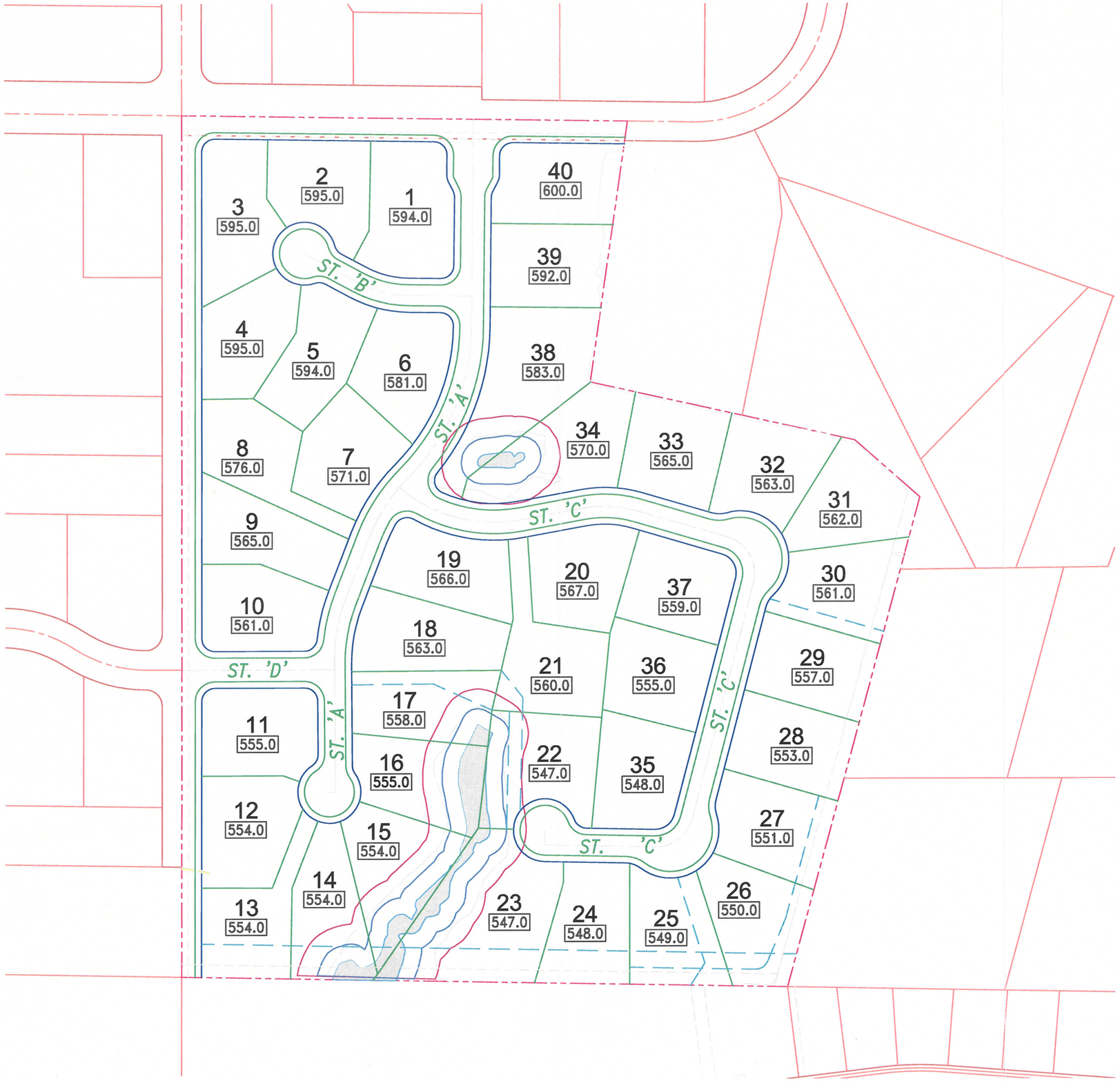
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